SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1405.—Vol. XXXII.] LONDON, SATURDAY, JULY 26, 1862. [WITH JOURNAL] STAMPED.... SIXPENCE. UNSTAMPED. FIVEPENCE.

THE INTERNATIONAL EXHIBITION—1862.

CLASS L—MINING, QUARRYING, METALLURGY, & MINERAL PRODUCTS.

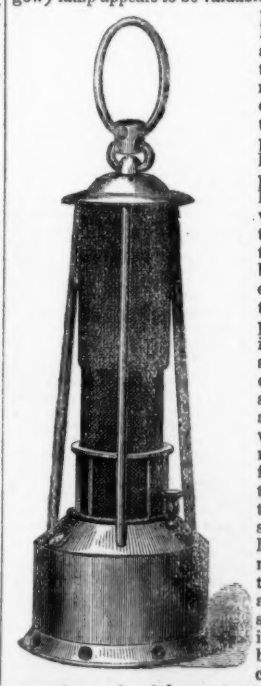
HONOURABLE MENTION.

...ron, E. and W.—For exhibition and analysis of an extensively-used limestone.
...erdare Steam Fuel Company—For their good manufacture of agglomerated coal.
...rton, R.—For simplicity and effective working of his apparatus for securing safety in [case of breaking of rope.
...rker, R.—For a good collection of hematite ores.
...rrow, B.—For a case of raw materials from the Isle of Wight, and of the products manufactured from them. [well in practice in Cornwall.
...nnets, W.—For an application of a safety-clutch to inclined shafts, which has worked
...emer, H.—For the invention and practical application of a process of the highest importance for the direct conversion of pig-iron into malleable iron and steel.
...nton, J. D.—For ingenuity of his apparatus for cleansing and moulding peat.
...nton, W. and Co.—For good quality of his safety-fuse.
...thness, Earl of—For patented method of cutting and preparing Caithness flagstones.
...low, J. J.—For ingenious safety apparatus, so contrived as not to be brought into play
...mpbell, Bros.—For foundry iron of good quality. [by mere slacking of the rope.
...se and Morris—For complete series of specimens of the strata sunk through at their pits, ...ld arranged in natural order.
...mbrane and Co.—For a difficult casting, 12 ft. by 3 ft. by ¾ in. [ground.
...eland, G. A.—For the utility and convenience of his cartridges for blasting in wet
...rett, J.—For specimens of varieties of salt produced from brine-springs.
...rett, W. F.—For the model of an apparatus to prevent overwinding, devised and put ...p by John Davies, at Lightmoor Colliery.
...wn Preserved Coal Company—For good manufacture from the best materials.
...ncan, Falconer, and Whitton- For large slab and step from the lower old red sand- ...stone of Arbroath.
...am, Jones, and Co.—For specimens of emery illustrating its mode of preparation.
...s and Everard—For specimens illustrating the application of the syenites of Bardon ...ill. [different seams.
...nie, A., and Sons—For good specimens, accompanied by section and analysis, of the
...th, Barber, and Co.—For specimens showing the full thickness of the Barnsley seam
...r, M.—For drawings exhibiting useful arrangements in collieries. [of coal.
...rlow, R.—For collection of the white building stone, of the new red sandstone, and ...e associated copper ores and barytes. [and important discovery.
...ssrs Mining Company for Ireland—Large specimens of calamine, illustrating a new
...ifax Corporation—For their collection and the exhibition of the peculiar marine fos- ...ils characteristic of the lower series of coal.
...mphire, J. K.—For the model of a safety apparatus proposed by him.
...rrison, Ainslie, and Co.—For the only production of charcoal iron in England.
...raven, W. H.—For interesting specimens showing the character of the granite of Lundy
...e, Frederick.—A collection of the mineral products of the district. [Island.
...t, J.—For a modification in the jigging process, tending to introduce continous action.
...kins, W. H., and Co.—For utilising the waste products of Cornish mines and obtain- ...ng ochre and umber therefrom.
...an, J. B.—For a set of models, suitable for instruction in schools. [bush Mine.
...an, T. B.—For his excellent workmanship in constructing the model of the Holm-
...an, W. H.—For a neat and strong form of pit-frame, and simple application of safety
...ll, J.—For assay crucibles of excellent quality. [apparatus.
...man, Rev. R. B.—For exhibition of the durable Devonian slate of the old quarries ...Tintagel. [in numerous collieries in Lancashire.
...ries, A.—For a model of Owen's safety-cage, which from its simplicity is applied
...wood Green Colliery Company—For specimens of a newly-discovered seam of Can- ...el, very remarkable for its high yield of gas.
...e, F.—For application of mica to lettering and other purposes.
...r, Ellis—For convenience and efficiency, especially in cases of emergency.
...k and Simpson—For good pig and wrought iron.
...instone, A. S.—For good manufacture of patent fuel from several varieties of coal.
...d Hill Coal Co.—For exhibiting in full height the Barnsley bed of coal, 9 ft. high.
...thwait, R.—For large examples of extensively-used grinding-stones.
...bell, W. B.—For collection illustrating the mineral products of Derbyshire and South ...rkshire, and their applications. [brokeshire.
...ray, A.—For sections and specimens of the beds of excellent anthracite in Pem-
...ray, J.—For model of compound steam-engine, with four drums, especially adapted ...r underground traction.
...n, Taylor, and Cory—For interesting specimens of coal and good illustrative section.
...ail and Robson—For fine and large landing from coal measure flags.
...ard and Co.—For collection showing the character of the coprolites, and other phos- ...phatic masses, and manures produced from them.
...er, C. M.—For noted good quality of coke made from Marley Hill coal.
...nd Coal Company—For fine block of coal raised from pits which have been fore- ...most in introducing improvements.
...mson—For Upward's manufacture of coke from anthracite smalls and dust.
...y, J. M.—For ingenious attempt to avoid the use of springs in the construction of a ...fety-cage. [duction of gas and oils.
...n Coal Company—For a peculiar variety of Cannel, specially adapted for the pro-
...fuel Company—For peculiar method of manufacturing patent fuel from washed ...mall coal. [white, of superior quality.
...mpsie, Whiting, and Co.—For specimens illustrating the manufacture of Paris
...ey, G. H., and Sons—For exhibition of good coke and Cannel, a rare production of ...Northumbrian coal field. [only in a limited district.
...r.—For a complete illustration of a part of the coal field which is fully developed
...on, Lupton, and Co.—For aiding in the development of an important branch of in- ...n Local Committee—A collection of mineral productions of district. [dustry.
...P. S.—For successful employment of tools devised by him for the extraction of ...ased tubing from above a bore hole near Yarm.
...ld Slate Company—For light and smooth quality of their slate. [cent discovery.
...ale Iron Ore Company—For gigantic specimen of a very remarkable iron ore of re-
...of Mull Granite Co.—For having opened out the fine red granite of that island.
...mbe, J.—For fine specimens of oxide of copper.
...dell, Tuttle, and Co.—For a series of specimens illustrating copper smelting.
...ock Committee—For the collection of the mineral products of their district.
...stend, Wood, and Co.—For specimens of tin plate and iron.
...er, Thomas, and Co.—For well-worked examples of the excellent coal measure ...stones of Dean Forest. [is unscrewed from a safety-lamp.
...ge, C. H.—For his method of ensuring the extinction of the light, when the gauze
...n, H.—For a convenient form of pump worked by the rope of the underground
...n and Price—For manufacture of good railway materials. [traction apparatus.
...s, J., and Son—For a superior polished granite vase. [district of South Wales.
...rvyn Iron Company.—For interesting specimens illustrative of the anthracite
...a: Davies, W. H. A.—For interesting and instructive specimens from a remark- ...e deposit. [and illustrating the structure of the country.
...er, T.—For fine and instructive specimens of ores, running with the stratification,
...S. and Co.—For fine and instructive specimens of ores, running with the strati- ...tions, and illustrating the structure of the country.
...: Government of India—For complete and instructive series illustrating the dress-
...and smelting of tin ores from a new locality. [rock crystal.
...a, Col.—For the exhibition of his very beautiful series of works of art in jade and
...ood, Captain J.—For an instructive series of specimens of magnetic iron-sand em- ...loyed in some parts of India by native iron-smelters.
...OUTH WALES: Lady Cooper—For exhibition of interesting series of gold speci-
...ker, W.—For collection of polished marbles from Argyle. [mens of the colony.
...ies, S.—For his zeal in sending specimens of copper ore and copper.
...EALAND: Cadman, J.—For an interesting series of the rocks of the colony.
...N AUSTRALIA: Cornwall Mining Company—For very large specimens of gossany ...per ore. [copper.
...Northern Mining Company—For a fine specimen of nearly pure red oxide of
...Bore Mining Company—For fine specimens of copper ore.
...r, T.—For exhibiting slabs of slate from the quarries of Montara.
...r, R. Y.—For novel experiments in the treatment of copper ores.
...ning Mining Company—For a collection of copper ores and smelting products.
...NA: Abel, Prof. J.—For the exhibition of a mass of meteoric iron of great size.
...Butters—For fine specimens of auriferous vein, and of various minerals.
...ern Local Committee—For illustrative set of specimens.
...ge Mining Company—For their instructive section.
...n, J.—For his rich specimens of auriferous vein stone.
...Company—For zeal displayed in exhibiting samples from their deep sinkings.
...ries East Mining Company—For zeal in sending a large quantity of auriferous
...s, G.—For the interest of his collections. [vein stone.
...For the care bestowed in forwarding interesting crystallised specimens.
...Gold Mining Company—For zeal displayed in exhibiting samples from
...Fund.—For rich specimens of gold in the matrix. [their deep sinkings.
...n Gold Mining Company—For zeal displayed in exhibiting samples from their
...sinkings. [their deep sinkings.
...of Wicklow Gold Mining Company—For zeal displayed in exhibiting samples from
Royal Saxon Gold Mining Company—For zeal displayed in exhibiting samples from their deep sinkings. [and tertiary rocks in the Cantabrian chain.
Vignoles, C.—For the striking delineation on a large scale of the forms of the cretaceous
Whitelaw, J.—For well-constructed model of his apparatus for safety in case of the rope breaking.
WESTERN AUSTRALIA; Shenton, A.—For a collection of fossils showing the existence of secondary age in Western Australia.

ORE-DRESSING MACHINERY.—The advantage of applying machinery as a substitute for hand labour in bringing ores into a marketable condition being daily more appreciated, the machine invented by Mr. A BERARD, of Paris, and exhibited in the main passage of the western annexe (Belgian machinery department) by Messrs. CAIL, HALOT, and Co., has naturally attracted the attention of many practical miners who have visited the Exhibition, and, in accordance with the wishes of several of them, we shall endeavour to give a concise description of it. It would appear that for some time past a coal-washing machine, by the same inventor, has been in successful operation in Belgium, and, in consequence, he turned his attention to so modifying the machine that it should be applicable to the treatment of metallic ores. The ore, in moderate-sized pieces, is fed into a hopper, and thence passes between a pair of powerful crushing-rollers, falling, when crushed, into a receptacle at the bottom of the machine, where an endless chain of buckets next takes it up and delivers it on to a jigging sieve, the fine ore passing through for further treatment, and that which has not been sufficiently crushed falling between a second pair of rollers, and thence returning to the bottom of the machine to be again taken up by the chain of buckets. The portion of the ore which has passed through the sieve is received in a cistern of water, and separated into two sizes. The ore being separated by several similar operations into the various sizes, each parcel is passed on to the jigging-machines proper, or those which separate them according to the specific gravity. Before the ore leaves the machine it is separated into three classes according to size, and into five according to specific gravity. The separation is complete, and an extremely small amount of manual labour is required, and the machine is not likely to get out of repair. Two men can treat 10 tons of ore per hour, where the arrangements for supplying the stuff are good, and it is calculated that the cost does not exceed from 5d. to 8d. per ton of ore treated. A prize medal has been awarded for the invention.

IMPROVED CRUSHING-MILL AND ORE-SEPARATOR.—Near the extremity of the western passage of the western annexe Mr. FAUCONNIER, of Paris, exhibits a machine which may be described as an improved Chilian mill, with an ore-separator attached, and which would, doubtless, prove of great utility in places where it is requisite to crush a large quantity of mineral cheaply. The rough ore is fed into a kind of hopper, the bottom of which is a sieve; this hopper is affixed to one end of the revolving axle, whilst the opposite end carries the crushing-wheel; but to avoid running this wheel over the ore already crushed a third wheel (le ramasseur), composed of a series of scoops, is likewise provided, and continually gathers up the stuff and throws it upon a conical sieve, near the central pillar of the machine. That portion of the ore which has been sufficiently crushed passes through the sieve and is collected, whilst the large falls again beneath the crushing-wheel, the operation continuing until the whole has been reduced to the necessary degree of fineness. The inventor designates his machine the *moulin à ramasseur*, and, as will be seen from our description, the crushing and sifting are performed at one operation. The central conical sieve is easily renewed when necessary, and if the ore be very hard the distributing hopper may be removed, and a second crushing-wheel substituted.

ARGAND SAFETY-LAMP FOR MINERS.—Safety-lamps are, of course, numerous in the mineral department. Waring's (the only lamp in Class I. which has received "Honorable Mention" from the jurors), Jones and Charlton's, and several other self-extinguishing lamps, which have been from time to time described in the *Mining Journal*, being amongst those exhibited. We shall at present refer to two only. Dr. J. GRAY's (Glasgow) lamp appears to be valuable only for its peculiarity, since for practical purposes we should think it is never at all likely to be used. It may be regarded as an imitation of the strap and cup sometimes employed by street mountebanks round their head to catch a ball in; there can be no doubt, we think, that it was from this that the idea was taken. Dr. Gray provides a metal plate to fit upon the collier's forehead, and from the centre of the plate there projects a rod some 6 or 8 in. long; to this a globe of wire gauze is fixed, with a swing lamp in the centre, hung on the ship's lamp principle. As a contrast to this, we may allude to the lamp exhibited by Mr. C. E. CRAWLEY, of Gracechurch-street, a lamp which has precisely the opposite features to Dr. Gray's, being practically useful, and not vastly different in character from the ordinary Davy. Instead of the ordinary burner, Mr. Crawley employs the Argand, the air requisite to supply the inner side of the flame being admitted through double wize gauze; the wick is raised by simply turning a small male-screwed pin, which passes through a female screw, immediately connected with the wick-holder. It is found in practice that in using a wick of this description no snuffing is required, and that the light is at least six times as great as from the ordinary Davy. The lamp is quite as safe for testing as the Davy, and in case of a sudden and dangerous irruption of gas can be instantly and safely extinguished. In burning, the explosive gas seems absolutely to burn, and, unless much in excess, to increase the brilliancy of the light, so that in proportion as the pit becomes more unsafe, the temptation to open the lamp decreases, just the opposite being the case when the ordinary Davy is used. Another improvement which has been introduced in Mr. Crawley's lamp is the insulated handle; the small ring is connected with the ordinary handring by a short cylindrical piece of metal, each of the said rings passing through a distinct wooden socket therein. These lamps are made entirely by machinery, so as to secure perfect accuracy in the fitting of the several parts, which are very simple, and are so constructed that any part, if accidentally damaged or lost, can be at once replaced without trouble, and at a small cost. The several parts of the lamps are put together with bayonet-joints, the whole of which are kept tight by half a turn of a screw, which is not removable from the lock, and cannot, therefore, be lost, as is frequently the case with the ordinary safety-lamp lock. By an additional improvement, just patented, Mr. Crawley has succeeded in providing that the lamp cannot be opened until the light is extinguished.



THE FLOOD-PUMP.—In close proximity to the potter's wheel, in the western passage of the western annexe, will be found a very practical-looking model, in plain zinc or galvanised iron, of the so-called "Flood Pump," invented and exhibited by Mr. R. A. GODWIN, of Lambeth, and of which honourable mention has been made by the jurors. The pump is double-acting, extremely simple in construction, and very effective; the quantity of water raised is very large, and the amount of friction unusually small. The top of the supply-pipe opens into a chamber, which may be described as a rectangular trough, with a cylinder forming the cover. There are four valves all opening outwards, two on each side of the supply-pipe, and between the first and second and third and fourth valves a connection is made with the cylinder, within which there is, of course, a suitable piston, to which motion is given by a wheel and crank in the usual way. The action of the pump will be at once understood; in whichever direction the piston may be moving, it is always drawing water from an ingress valve, and expelling it from an egress valve, a continuous and powerful current being the result. The pump could be constructed of any size, and we opine that a machine of this construction, with cylinder 1 foot in diameter, and water-chamber equal in capacity thereto, would be as efficient a contractors' pump as could be desired. It will be seen that from the position of the valves choking is impossible, as a piece of wood or other rubbish which could pass up the supply-pipe would find a ready means of exit through the valves. But this is not all; the piston and cylinder being above the water-chamber, any grit or other matter which may be brought up with the water would assuredly be washed away at the reversal of stroke.

THE CALIFORNIA FORCE-PUMP.—In the United States machinery department, in the south-eastern Court, is an extremely powerful force-pump, invented by Mr. THOMAS HANSBROW. The pump is double-acting, and the whole of the valves can be got at whenever necessary without removing a single bolt or nut. Owing to the manner in which the motion is communicated to the piston, very little power is required to work it; whilst from the circumstance of the valves being always under the water, and the pump properly primed, dry valves and leakage are alike impossible. The mode of communicating the motion to the piston is worthy of particular attention. Two handles can be affixed, and upon their being put in motion, a rocking lever is caused to move a horizontal bar placed beneath the cylinder; to one end of this bar an arm is affixed, and connected with the piston-rod. Friction appears to be in every part reduced to the minimum, and there can be no doubt that the principle is well adapted for marine and domestic purposes, and for the construction of fire and garden engines of any power. The invention is at present being extensively developed in the United States, and it is proposed either to sell the English patent, or to grant licenses in this country. The pump exhibited is substantially made, and there are no parts which can get out of order except by hard and long-continued wear.

IMPROVEMENTS IN TUBULAR STEAM-BOILERS.—During the past few years a new style of boiler tube has been extensively introduced in Paris and other parts of France, and has given great satisfaction, owing to the facilities offered for the removal of the tubes without cutting or injuring them, and for preventing the leakage through the joints at the junction of the tubes with the boiler-plates. The invention is known as Barré's system, and specimens of its application are now exhibited in the western annexe (French Department) by Messrs. FONTAINEMOREAU and GILBEE. The wrought metal tube is placed in position, and then fixed by the insertion within it of a cast metal socket, which holds the whole firmly together. When it is required to remove the tubes, either for cleaning or to replace them with others, the socket can be at once removed, and the tube changed. From the results obtained in the factories where the invention has been adopted it appears that the saving of the wear and tear of the tubes is not the only recommendation of the improved system, considerable economy being also effected in the consumption of fuel. The specimen of the tubes will be found in the western passage of the annexe, a little south of the Belgian sewing-machines; and as we understand that the cost of the new tube is about the same as that of the old ones, they will doubtless be appreciated in this country.

STEAM VALVES.—In the western annexe, in immediate proximity to Armstrong's crane, is a case of gas and steam-valves, high-pressure ball-cocks, &c., of excellent workmanship, exhibited by Mr. J. BECK, of Great Suffolk-street, Southwark. Not a single article is exhibited which will not bear the closest inspection, and call forth the admiration of all who examine them; but the greatest novelty is, doubtless, the patent self-closing valve and water-waste preventer, which Mr. Beck has invented. It is extremely simple and compact, and offers the greatest facility for a constant supply of water with the greatest economy. The jurors have awarded Mr. J. Beck with an honourable mention, but we have not the least hesitation in stating that the workmanship of the articles in Mr. Beck's case is fully equal to that in any machine which has been rewarded for good work. The self-closing valve is constructed upon an entirely new principle, and the working parts are free from complication, and not liable to get out of order. The invention is described as particularly applicable to small houses, both in a sanitary and economic point of view, the use of butts, cisterns, ball-cocks, and waste-pipes being done away with, and the water being always kept in the purest possible state.

IMPROVED TUBULAR FILTERS.—Although we are not certain as to the precise composition of mineralised wool powder, we can safely state that Mr. de Buffon's tubular filter, exhibited by Messrs. FONTAINEMOREAU and GILBEE, and described as being made with this material, is as effective as any in the building. This mineralised wool powder is pressed mechanically in the space between an external metallic tube, or casing, and an internal perforated galvanised iron cylinder. The water from the main is conducted by means of a connecting-pipe into the external casing, and passes through the wool powder into the inner cylinder, by which it is purified instantaneously, and it is drawn out in a fit state by a tap fixed at its lower extremity. The filter is equally applicable to the purification of water, whether the supply be derived from the main, from a suction-pump, or from an ordinary reservoir; in the latter case, the application of the syphon principle appears to be most advantageous. By the use of this filter the whole of the salts held in a state of solution are disengaged, and

the water thus purified and employed to generate steam does not form incrustations, which increase so greatly the consumption of fuel, and cause those dreadful explosions of daily occurrence. One of the principal advantages of this system, and which distinguishes it from all others hitherto known, is the facility with which the filter is cleansed. This operation is executed in a few minutes without taking down any part, and without any expense whatever. It suffices to apply a counter current, by which the water is forced to pass from the internal cylinder through the wool powder in the outer casing. The course of the water being reversed, the delivery takes place as usual.

FIRE-BRICKS AND REFRACTORY GOODS.—In the portion of the western annexe devoted to the machinery from Belgium, near the extremity of the eastern passage, will be found a comparatively large space allotted to Mrs. DEFUISSEAUX, of Baudour, near Mons. This lady, although displaying a less extensive assortment than some other exhibitors, has sent articles with not less merit—perhaps the most attractive fire-clay article in the Exhibition being her large furnace vault; it is about 8 feet in depth, and some 6 feet wide, and is in every respect perfect. The jurors have awarded a prize medal for this collection, and we may unhesitatingly state that, whatever questions may arise as to the impartiality of the awards, no one will doubt Mrs. Defuisseaux's claims, the manufactures she exhibits being of the highest possible class. Mrs. Defuisseaux has long enjoyed a high reputation as a manufacturer of refractory goods, and the specimens which the jurors have pronounced worthy of a reward for excellence of workmanship and cheapness cannot fail to secure an even more than ordinary sale of them.

MAGNETIC IRON ORE.—In the Algerian department, to the south-east of the French Court, Mr. TALABOT, of Paris, exhibits some fine specimens from a valuable stratum of magnetic iron ore which exists in the province of Constantine, and is brought to the littoral, near the town of Bona, by a railway 20 miles in length. The strata are of the greatest regularity, and upon careful analysis found to contain—Peroxide of iron, 65·6; protoxide of iron, 29·4; carbonate of lime, 0·2; carbonate of magnesia, 2·2; silica, 0·2; alumina, 0·6; and water, 1·8 = 100. In the furnace 68 per cent. of metallic irom may be relied upon, and the price at the place of shipment 12s. per ton. Ores may be procured by those desirous of testing them at the house of the Sisters of Charity, at Brompton.

RAILWAYS IN SPAIN.—In the department devoted to civil engineering Mr. CHARLES VIGNOLES, F.R.S., exhibits a large and beautifully executed model, 20 ft. long and 12 ft. wide, designed by himself, of the passage of the Tudela and Bilboa Railway across the Cantabrian Pyrenees. The extent of railway on the model is 36 miles, and includes the windings along the skirts of the mountains. The features of the Pyrenean chain have been delineated from triangulations, measurements, spirit levelling, contouring, and barometrical observations; and the topographical, geological, and engineering details are duly shown over nearly 220 square miles. The railway in question is the first which has actually effected the passage of either of the two greatest mountain ranges in Europe. The outlines of the model were built up by Mr. Salter, of Hammersmith, known for many years as one of the first modellers in the United Kingdom for works of engineering. The details were worked up by Messrs. Mathews and Bennison, the district engineers of that part of the railway, assisted by Mr. Croudace, one of the assistant engineers. The model was coloured by Mr. Skelton, a known and distinguished English artist, who visited the localities for the express purpose of studying the characteristic features and appearance of the Cantabrian Pyrenees. The model will be found particularly interesting to the geologist, owing to the fidelity with which the broken surface of this mountain district is delineated, enabling him to observe some of the grandest effects of those sublime convulsions of the globe which have upheaved the strata from their normal horizontal beds thus brought forcibly before his eye, on a larger scale, and over a greater area, than has hitherto been accomplished; and should he wish to follow the details of the ground, the means of doing so are abundantly before him. The geological character of the country is almost exclusively that known as the carboniferous limestone, the coal lying at unknown depths. The contortions of the strata are wonderful, and the rocks are so shaken as rarely to afford good building materials. Immediately south of the Techas Pass, and nearly along the line from east about the village of Nanclares, on the Zadorra River, to the salinas, or salt works, of Anaus, and the hamlet of Espejo, in the west, the character of the strata changes. First, we find conglomerate or plum-pudding stone along a narrow belt, and then gradually appears the Jura limestone, extending to the left bank of the Ebro. It is only so far as the model extends that the geology has been much examined; but the whole of that part of Spain offers a rich harvest, attainable by careful study. The model reflects the highest credit upon all concerned in its production.

SAFETY CHANDELIERS.—The curious circumstance that no medal whatever has been awarded for any invention calculated to ensure increased safety to human life will at once explain many otherwise mysterious selections and omissions observable in perusing the awards of the jurors. On the extreme east of the court devoted to the exhibition of hardware manufactures will be found an elegant chandelier (in the construction of which several improvements entirely unthought of at the period of the previous Exhibition, improvements whose practical utility has been acknowledged by their general adoption by the public), exhibited by Mr. R. H. HUGHES, of the Atlas Works, Hatton-garden. The chandelier in question is of first-rate workmanship, and affords complete preventives for two distinct classes of accident—firstly, those arising from the breakage of the chains; and, secondly, those resulting from escape of gas. As a substitute for the ordinary plumb-bob balance weights, Mr. Hughes provides a single handsome coronet, encircling the hydraulic tube, the whole of the chains being thus connected with a single balance weight; the natural consequence is, that so long as a single chain remains perfect the body of the chandelier cannot descend. Of course, it will be admitted that it is extremely unlikely that more than one chain would be broken before the accident would be discovered and remedied, yet provision is made to admit of the whole of the chains being suddenly ruptured without producing accident. By the introduction of a conical valve and stop at the bottom of the hydraulic chamber the chandelier would be at once caught, and the escape of gas prevented. The second safety contrivance consists in the application of a small organ-pipe, or whistle, at the top of the hydraulic chamber, in such a way that whilst their is sufficient water to prevent danger the whistle is inactive, but immediately the danger point is approached the alarm is sounded, and cannot be checked until the cause of danger is removed. The chandelier and safety contrivances are well worthy of inspection, and as an instance of the extent to which the improvement is appreciated, it may be stated that it is applied in the council chamber of the Society of Arts, and that Mr. Sandford, the chief secretary of the International Exhibition, has himself adopted it.

THE COMMERCIAL PRINTING MACHINE.—In the western annexe a new machine has been placed during the past week for printing cards, handbills, or circulars of any size up to foolscap, at the rate of from 1000 to 1500 per hour. The machine is exhibited by Messrs. J. and R. M. WOOD, of West Smithfield, and will be found at the southern end of the eastern passage; it is compact and simple, and is worked with ease and rapidity by a single person, who need not be an experienced workman, and the making ready occupies considerably less time than on the ordinary hand-press: it may be worked by steam-power or treadle. It is self-inking, the colour being capable of such accurate regulation that it will not vary the whole day. It is a platten, and therefore does not injure the type; and as it runs on bearers, it is steadier than even the hand-press. The price of the press is low, and it is well deserving of inspection.

PERCUSSION-CAP HOLDER.—In the Ordnance Department an extremely simple and effective little instrument, intended for military and sporting purposes, is exhibited, which will, doubtless, come into very general use as soon as its existence is thoroughly known. The invention of the percussion cap-holder is due to Mr. BOCCIUS, and large numbers have already been manufactured by Mr. TILLEY, of Kirby-street, Hatton-garden. The instrument is somewhat in the form of a spectacle-case, one end of which is tapered, so that room only is left for one cap at a time to pass out through the orifice. By the use of the holder the necessity to feel for a cap is removed, and the soldier or sportsman is prepared to fire much quicker than usual, even in the coldest weather or climate, loss of caps in the field being almost impossible. There are no internal springs, and when once the caps are placed in the case there is no clogging, and one cap is always ready to be placed upon the nipple. The holder for the regulation flange-cap, although small, and weighing but 2 ozs., will contain 30 caps easily, whilst those for sporting purposes will hold from 65 to 150; and as the price is but 1s. 6d. for the military, and 2s. 6d. for the sportsman's holder, they cannot fail to find an extensive market.

BORING AND WINDING APPARATUS.—An invention, which relates to the arrangement and construction of machinery for facilitating the operation of boring, and also for winding the bore-rods and the pump, used for cleaning the bore, has just been invented by Mr. A. Barclay, of Kilmarnock. Under one modification a portable or locomotive engine is used for the purpose. On the upper part of the boiler shell are arranged two horizontal cylinders, the piston-rods of which work in the direction of the front of the engine, and give motion to a horizontal shaft, on which is fitted a winding barrel. On this shaft is keyed a pinion, which drives a spur-wheel, carried on a second shaft, and also fitted with a winding barrel. On the barrel of the first shaft is wound the wire-rope for lowering and raising the pump or cleaner, and on the second barrel the chain for lifting the boring-rods is wound. In front of the horizontal steam-cylinders, or in any other convenient position, is fitted a vertical cylinder, with an ordinary slide-valve chest at the back part. The spindle of the slide-valve extends upwards some distance above the stuffing-box, and this portion of the spindle is screwed. Two nuts, with internal screws corresponding to the spindle, are fitted thereon; these nuts form the bosses of a pair of hand-wheels, by means of which they are readily shifted up or down the spindle. Between the nuts a loose collar traverses up and down the valve spindle, the extent of its traverse being regulated by the position of the nuts above and below it. This collar forms the central part of a cross-head, the extremities of which are connected by links to another cross-head above. The upper cross-head is connected to the end of the rocking lever which actuates the boring rods, and this lever is also connected to the piston-rod of the vertical cylinder, from whence it derives its motion. In lieu of this arrangement, other modifications of valve gearing, as used in steam-hammers, may be used for the purpose. The steam is admitted to the upper side of the piston only, the lower part of the cylinder having an aperture communicating with the atmosphere. The steam, upon being admitted to the cylinder, depresses the piston, and so raises the front end of the rocking lever and the boring-rods. The descent of the rods and boring tool is regulated by controlling the escape of the steam from the cylinder: this is done by means of a cock fitted in the exhaust pipe. By keeping this cock closed the boring-rods remain suspended, and the force with which the tool is caused to descend is regulated with the utmost nicety by simply turning the cock so as to allow the steam to escape with more or less rapidity. The arrangement of this part of the machinery may be varied by using counter-weights for regulating the escape of the steam, instead of a cock in the exhaust pipe, whilst the arrangement of the traversing nuts on the valve spindle serves to regulate the extent of motion of the valve and the amount of steam admitted to the cylinder. If preferred, the steam may be admitted to the lower side of the piston, the other portion of the details being arranged in accordance therewith, and in lieu of using a vertical cylinder as described, it may be arranged horizontally, and be connected with the beams by means of a bell crank lever, or other equivalent mechanical contrivance. The cylinder is also proposed to be arranged immediately over the bore, and the boring-rods to pass up through a hollow piston-rod. The position of the cylinder may also be varied by placing it between the fulcrum of the rocking lever or beam, and its free extremity to which the boring-rods are attached, the cylinder being placed either above or below the rocking lever, as may be most convenient. A lofty tripod is arranged over the apparatus, which carries at the upper part slotted bracket pieces, for the purpose of suspending the boring-rods in lengths. The rods are hauled up by means of a clip or catch, which is brought over the slot in the bracket, and they remain suspended; the hook attached to the winding-chain slides down the rods in readiness to be attached to another length. In this way considerable time is saved in raising long lengths of boring-rods.

NORTH OF ENGLAND INSTITUTE OF MINING ENGINEERS.

A meeting of the members of this Institute took place at their rooms, Neville Hall, Newcastle-on-Tyne, on July 17.

CONSUMPTION OF COAL SMOKE.—Mr. O'REGAN, who was introduced by Mr. Matthias Dunn, Inspector of Coal Mines, explained to those present his system for the prevention, by combustion, of the smoke of coal. It is effected by the admission of a certain quantity of heated air, which is thrown upon the ignited coal, and which affords the oxygen for the combustion of the gaseous products given out by the coal when in the furnace. Mr. O'Regan stated that boilers fitted up with his apparatus, and at small expense, were successfully at work at Ryehope Colliery.

The PRESIDENT said the meeting were much obliged to Mr. O'Regan for his explanations. The most advisable course would be for members interested in the successful employment of this method of consuming coal smoke to visit Ryehope Colliery, and see it in action.

CAUSES OF BOILER EXPLOSIONS.—The discussion of Mr. S. S. Crone's paper "On Boiler Explosions" was then opened by

Mr. CRONE, who drew the attention of those present to the necessity of strictly attending to the purity of the water employed. An impure water was calculated to injure the plates, as well as, from the sediment deposited, to interfere with the economical and safe working of the boiler.

Mr. J. J. ATKINSON, Inspector of Coal Mines, thought it very difficult to account for many of the explosions of steam-boilers which had come under his notice. In many cases there was undoubted evidence of a sufficiency of water. He had observed a fact, which may possibly turn out of great importance as a guide for the direction of future investigations; which was, that explosions very frequently happened after the engine had been for some time at rest. It might be that, at some period remote from the occurrence of the explosion, there had been a deficiency of water, and from over-heating and unequal expansion, the boiler might receive serious damage, and be unable to bear the ordinary strain. This would cause it to give way on the first occasion of being again subjected to that strain.

Mr. MATTHIAS DUNN advocated the use of two fire-places when long boilers are used.

Mr. CUTHBERT BERKLEY gave some interesting particulars relative to an explosion of a boiler at Burnopfield. He stated that the sediment was formed with extreme rapidity; and that, having been analysed by Messrs. Richardson and Browell, it was found to consist of substances which were extremely bad conductors of heat. From this it was inferred that such portions of the boiler as were coated with this non-conducting deposit must be very likely to become overheated, and thus deteriorated.

THE ANNIVERSARY MEETING.—Before the meeting broke up the PRESIDENT brought before them the recommendations of the Council as to the business of the anniversary meeting, on Thursday, Aug. 7.

These recommendations were unanimously adopted and confirmed by those present. Their substance was, that the paper read at Birmingham, in July, 1861, and now published as Volume X. of the Society's Transactions, should be discussed at the meeting on Aug. 7; and that this, with the ordinary routine business, should constitute that of the aniversary meeting. To give ample time for the discussion, it was resolved that the hour of meeting should be ten o'clock, and that the members should dine together at six P.M. It was also arranged that facilities should be afforded to such members as might wish to visit any of the collieries of the vicinity, or other establishments of interest, on the day following.

The following is an abstract of the paper read before the members of the Institute of Mining Engineers by Mr. STEPHEN S. CRONE, M.E., of the Killingworth and Seaton Burn Collieries, "On Steam-Boiler Explosions:"

The serious and disasterous consequences usually resulting from steam-boiler explosions were of such an important nature as to require the closest investigation, as under the most favourable circumstances they are generally surrounded with difficulties, and attended with results which in the present state of our knowledge of the subject seemed difficult to account for in a clear, practical, and satisfactory manner. He proposed giving a minute descriptive account of the accident, as a record of facts, to aid those interested in the investigation of those, to say the least, mysterious occurrences, which ever ought to be carefully enquired into, and their attendant consequences, to endeavour, as far as possible, to arrive at the true source of the accident.

The boiler which exploded (No. 4, at Seaton Burn) was 32 ft. long, 6 ft. 8 in. diameter, working at a pressure of 35 lbs. to the square inch, being one of six large cylindrical boilers, varying from 32 to 35 ft. long, coupled together with 8-in. steam-pipes. There were two ranges of feed-pipes, two safety-valves, two floats, one of which was an alarm whistle float. The boiler mountings were constantly examined, and kept in proper working order, everything calculated to guard against accident. The boilers were also attended to by steady, experienced men; but, from some unexplained cause, the plates of the boilers would seem to have been over-heated, and the explosion followed, with a fearful amount of violence—the boiler mounting about 120 ft. straight up into the air, and dividing into three portions, the main portion falling 97 yards to the east, a huge sheet, rent and ruptured in a most extraordinary manner, the fire end being reversed from its original position, evidencing an extra amount of force at that end, as the boiler must have turned round in its flight after leaving the boiler seat. The second portion went more northward; and the third, a part of the fire end, went in an opposite direction to a distance of 76 yards, giving strong indications of having been ruptured with great violence. Sketches of these portions were laid before the Institute. The boiler seats were shattered, blown down to the foundation, and as completely destroyed as if a mine of gunpowder had been sprung beneath them, and the boilers thrown about in various directions, the outside one turned bottom upwards. The boiler had only been at work one day before it exploded, after having a thorough examination, repair, and cleaning. The safety-valves, and other boiler mountings, had been stripped, cleaned, oiled, and everything done to make them efficient. The boiler was quite tight, and no leakage visible.

It was doubtful, from some unexplained cause, that the boiler had been deficient of water. The consequences might be something like the following:—The firing going on as usual, the upper portion of the boiler would become over-heated, especially from the edge of the water to the top of the flue; the tenacity of the plates would be weakened as their temperature increased above 550°, and the liability to rupture greatly augmented by the unequal straining of the iron consequent upon the temperature of one portion of the boiler being so different and variable from other portions; the steam and water would become surcharged with heat to a considerable degree above that indicated by the pressure of the steam,—thus storing up power, whilst the plates were decreasing in strength, until some disturbing influence suddenly reduced the pressure of the steam from the surface of the highly-heated water, which may arise from the sudden opening of a safety-valve, or exhaustion caused by the opening of the steam stop-valve; if standing, or starting the engine, or in cases similar to this, where a number of boilers are connected, such, perhaps, not supplying a uniform quantity of steam; by a sudden draught of steam to the engines working; or, finally, by the gradually weakening plates of the boiler at last giving way, and splitting open at a weak joint.

Upon examination after the explosion, no part of the plates measured less than ⅜ in. thick, but from the exposure of the rivets and fractured seams it was evident the boiler had been originally of defective construction. The rivet holes were not opposite each other, and had been picked or cut out into an oval form, and forcibly drawn together by means of drifts or pins, to get the rivets entered and driven up, irrespective of their being at right angles to the direct strain upon the joints. The immoderate use of drifts or pins, as well as excessive caulking, was a clumsy, injurious remedy to defective workmanship in the construction of boilers, and could not be too much censured. The forcible unequal strain and compression by those applications, as having all the effect of a wedge driven in, must cause lasting injury and constitutional weakness; the plates being injured near the edge, where they are least capable of resistance, and most likely to give way, and where, perhaps, they may be laminated and faulty by being pared or slabbed too near the edge. The effect of this is often seen by the plate cracking from the rivet holes, and fractures proceeding along the line of rivets for considerable distances, thus greatly augmenting the danger of accidents to boilers. This objectionable method had, no doubt, injured the plate, resulting in a joint of very questionable strength.

Referring to the interesting experiments which have been tried as to the effect produced on water thrown upon red-hot plates taking the spheroidal form, the temperature of maximum vaporisation for iron has been variously stated from 300° to 350°, and the temperature for perfect repulsion of drops of water about 400°, at which temperature the water does not wet the metal under atmospheric pressure, but assumes the spheroidal form, or small spheres, enveloped in a thin coating of steam, having the power of reflecting the heat, and preventing immediate contact with the iron; the water in this form rolling about, with its elastic coating, evaporating very slowly, and not flashing into highly elastic steam, as might be assumed would be the case. But it must be remembered these experiments have generally been tried under simple atmospheric pressure. It is most remarkable these spheroids never reach a temperature of more than 205°. I think it may be doubtful whether inside a steam-boiler, heated to redness, this effect would be produced upon any large body of water at a high degree of temperature, and under the pressure of several atmospheres, as it may be assumed the pressure of the steam in the boiler would overcome the reflecting power of the spheroid when near the plates, against which it might be dashed, and thus cause the sudden production of a large quantity of steam upon any disturbing influence putting the steam in motion, such as the opening of valves, &c., or even sharp heavy firing, causing the water to rise to a higher level than at the time the plates were heated. Whether this is the case with red-hot plates or not, it is certain that plates at a lower temperature, about 300°, which gradation must, of course, exist before the plates are red hot, are capable of producing steam in a most rapid manner, upon water being brought in contact with them, and thus cause the most serious consequences.

The result of boiler explosions generally indicated the exertion of such force and violence as to have encouraged the supposition that they must have been caused by some more explosive agent than steam, which in ordinary everyday work we hold as completely under control. Electricity and hydrogen gas have generally been adduced as the forces most likely to produce such destructive effects, but how either the one or the other is generated we are left entirely to imagine.

A curious and uncommon circumstance had occurred at Seaton Burn, about 18 [illegible] ago. A boiler had been boiled dry through the failing of the feed; the engine remained all the time, exhausted the steam, until the supply failed, when it stopped, and was not be moved. The fire was withdrawn, and the boiler allowed to cool down. When sludge hole close at the bottom was taken off the following morning, and a lighted held at the hole, a long flash of flame issued out four times, gradually retreating the boiler, where it was soon consumed. No doubt a portion of the water had been composed, the hydrogen liberated, and the oxygen fixed with the iron; the former get largely mixed with atmospheric air through the rivet holes and vents, which were loose and burnt, thus forming a weak explosive compound, which fired when came in contact with the flame of the lamp. This boiler was quite new; had it an old or weak one it might have given way and exploded.

Mr. Crone then explained the boiler fittings now in use at Seaton Burn Colliery. blow-off pipe was particularly described. A pipe about 2 in. diameter was placed the top of the boiler in a diagonal direction, within the boiler, to a point 1 ft. beyond the end of the fire-bars. A small round hole was bored in the pipe, a little above lowest working line of the water in the boiler. The pipe outside the boiler was down into the fire-hole, in which was placed a cock, easily accessible to the this cock required to be turned frequently, at short intervals—say, every half when turned, the water and mud were blown out from the bottom, and the steam ing the water towards the small hole at the top, made a whirlpool, which drew skum from the boiler, and blew it out above. Should the water be below the hole at of course, nothing but steam issues, thus indicating unmistakeably that the water low, and becomes a good check upon the floats. This was called a blow-off, and gauging pipe, and is a remarkable useful and inexpensive application. One who had used it was compelled, previous to placing the pipe upon his boiler, to clean out every month, when about an inch of mud was always taken out; after using blow-off pipe the boiler was opened out, and found quite clean. It has gone for months, and is still clean when opened out.

It was reasonable to anticipate that boiler explosions might, at least, be reduced number, by the boilers being well constructed, and of good materials; the working pressure regulated to suit the nature and character of the boiler, and reduced as it get deteriorated by age and wear; boilers carefully used, cleaned, and examined out, by careful, competent workmen, every time they are opened; the mountings such a form as effectually to perform what they are destined to do, and examined short periods—every hour, or less; the feed-water regulated by careful and trustworthy men; safety-valves closely examined, and firing regulated to requirements of engine. These arrangements carefully attended to, may at least ensure comparative safety.

DISCOVERY OF A NEW PRINCIPLE IN NATURAL LAW.—STEAM-POWER SUPERSEDED IN MINING OPERATIONS.—Mr. George Rydell, of Cambridge-street, Holborn, has invented and patented an apparatus which, if successfully developed will, at least for mining purposes, entirely supersede steam-engines, and all other machines hitherto used for the production of motive power. The inventor very justly remarks that "it is no easy matter to persuade men to renounce at the outset that which from the remotes ages has been considered impracticable if not impossible; and hence, when an important discovery is made, it is desirable it should be so explained as that no doubt can be raised against its utility in the minds of those who are competent to judge of it in a scientific manner; and having discovered a wonderful mechanical appliance, it not his intention to enter into an elaborate description of its formation, but he will content himself by giving a few abstract details concerning its capabilities, which he has no hesitation in affirming can be realised, and in a way never before known, although sought after centuries ago. He does not unto himself the credit of being an inventive genius, but is in a position to declare the world that he has found out a mode of raising water from an unlimited depth to unlimited height, without being in the least dependent upon steam-power; and he scarcely add, that to talk of performing such an act has been hitherto treated with derision, and scouted at as a libel upon the laws of Nature; and it is, and ever has been universally held that no pump could raise water higher than 33 feet, or thereabouts. This being regarded as the Alpha and Omega of the natural law, engineers have always been satisfied to resort to steam agency in order to lift water below or above the point when the height or depth has exceeded the limits of atmospheric pressure, and no one has yet appeared to upset the fallacy." Mr. Rydell considers that the time has arrived when it must share the fate of less ancient misconceptions. Speaking of raising water from mines, however deep, he says—"The apparatus would cause the water to ascend to the surface independently of steam-power, no matter what the depth might be; and when it is considered how vast an extent of labour, fuel, machinery, is annually incurred in the working of mines, the importance of my new principle at once impress itself upon those who are interested in the mineral wealth of country. Some of our richest mines are constantly flooded with water, and how to them has been a knotty question for a considerable length of time, and property of value of many millions sterling is laying dormant for want of a process by which water in which it is submerged can be drawn away. Various methods have been adopted, but, even if successful (which they seldom are), have involved an outlay which the paucity of the dividends tells too plain a tale; and he can reduce the expense to a comparative trifle, and accomplish an effectual—in fact, complete—outfloor the inundating waters, and catastrophes arising from the breakages of huge engine beams, and other mechanical causes, will be averted, there being no attendant risk any kind." The enormous power which Mr. Rydell proposes to secure by his marvellous system of setting natural laws at defiance may be judged of from the fact that asserts that, although the Great Eastern has a steam-power of 3000 horses, he can only propel this monster vessel over the Atlantic at the speed it now travels by steam agency, but, from cisterns of cold water, he can obtain even a greater power than it possesses, without using any coal for navigation purposes, thereby leaving the 12,000 space open for additional cargo. It would be positive extravagance to consume coal steam-engine purposes, when a still cistern of cold water would answer as well, and enabling the vessel to leave port at a moment's notice, if necessary."

BORING MACHINES.—Some improvements in machines for boring holes in rocks have just been patented by Mr. Treeby, of Westbourne-terrace Villas, and, as the subject is one of much importance, it is hoped that the invention will receive that attention which its merits entitle it to. A rod or boring tool is fastened to a striking-rod, which rod moves in iron or wood frames. On this striking-rod there is fastened a serrated disc, or face rachet, and a spring likewise attached, which gives the blow to the boring tool. The boring tool is drawn by a cam working on a spindle; the cam rotating strikes against the serrated disc; on the striking-rod pressing the spring back as soon as the cam passes the centre of the striking-rod is instantly released, and the blow is given by means of the spring before named. The cam, on passing the serrated disc back, slightly turns it, so that the tool does not strike the rock in the same place. The spindles that have the cam on them are set in motion by gear work, driven by any suitable means. Any number of striking-rods can be worked at one time from one engine or machine. Any of the strikers can be held back by a catch, at the will of the workman. When a jumping blow is required, the whole of the striking-rods are held back, and a rotary motion given to striking-rods that hold the boring tool. On each striking-rod there is a cog-wheel which is loose when a striking motion is required, but when a rotary motion the wheel is made fast to the striking rod. The cog-wheel is so geared that any number of drills may rotate in boring through slate or soft rock, or part of the drills may rotate, others have the jumping motion. The iron framing before named is fixed on a carriage so constructed that the drills may be moved in any direction with facility.

IMPROVED BLAST-FURNACES.—As an improvement upon his furnaces patented in 1860, Mr. Joseph Bonne, of Paris, proposes to introduce certain modifications, which he finds renders them thoroughly effective. He gives the furnace an elevation of about 27 feet, and closes the arch roof than at present, the size of the cast-iron plates forming the foyer must be larger, to have a thicker covering of bricks; it is also preferable to mount it on cast-iron columns in place of stone pilasters. A forepart of the hearth is added, to work if required, the ore funnel and counter-funnel are done away with, and the gas jets or pipes are ranged in the counter, or stone cap, of the furnace. The plates forming the top of throat for compressing the gases are suppressed, the counterweight alone serving to them into the lime kiln.

UTILISING THE WASTE HEAT OF FURNACES.—In the re-burning of animal charcoal in revolving retorts much heat has hitherto been wasted. For this Mr. P. Cowan (of Cowan and Sons), of Barnes, propose a remedy having just patented an invention the object of which is to utilise the lost heat. Under the invention which he has just patented, he proposes to apply combine with the furnace in which the retorts, vessels, or cylinders are fitted and heated or to or with the flues communicating with such furnace, a boiler, or generator, in position as to be exposed to the action of the waste heat of the furnace, so that if desired steam shall be generated in such boiler or generator simultaneously with the carrying on the process of re-burning the charcoal. The steam so produced may be carried off use as required. The claim includes partially revolving chambers also.

DUNLOP'S CALCULATOR.—This invention is intended to supply a deideratum which has long been needed; by its use fractional calculations which hitherto has been difficult and tedious, is made clear, and a child with half an hour's study of the explanation can master it with ease and accuracy. It is a combination of the slide rule and the ready reckoner. Multiplication of money by quantities from 1-32d of an unit to nearly £20,000 in any combination of figures, at prices varying from 1-32d of a penny upwards, advancing by 16ths and to pence and shillings in any combination of prices are readily and accurately computed. Division of money, for obtaining the value of the unit or costs, are also worked by and to the same extent of figures as in multiplication. It weighs less than 2 ozs., is alike suitable for the desk and the pocket.

VOLUMETRICAL ANALYSIS.—The valuable gift of treating scientific subjects in such a manner that the least diligent student may acquire such knowledge with the least possible labour appears to be possessed in a large degree amongst the professors and graduates of Trinity College, Dublin, than amongst those of any other seat of leaning in the kingdom. We have on many previous occasions alluded to the extremely practical nature of the Manuals published by Profs. Galbraith and Haughton, and we have now before us an excellent companion to them in the "Handbook of Volumetrical Analysis," just issued (through Messrs. Longman) by Mr. R. H. Scott, M.A., secretary of the Geological Society of Dublin. The work gives an excellent insight into the entire science of volumetrical analysis, as the centigrade system has been adopted, all unnecessary complication is avoided, and a really useful practical work produced.

"THE INFLUENCE OF RAILWAY TRAVELLING ON HEALTH."—To those who are desirous of obtaining sound information upon this subject, we cordially recommend the little book just published by Mr. Hardwicke, of Piccadilly, for a shilling, and containing a reprint of the very valuable articles from the *Lancet*, the proprietors of which recently appointed a scientific commission to conduct an enquiry into the influence of railway travelling on the public health. The results were given in ample detail in the articles in question, but they can be best stated thus:—Railway travelling then as at present conducted is more free from danger to life and limb than any other mode of conveyance; but habitual travellers preserve their health, should avoid unnecessary excitement, either in catching the train or in overtaxing the brain by attempting to do too much work in a given time, in order to return from business by an early train.

FOREIGN MINING AND METALLURGY.

There is no change to notice in the situation of the Liége market for pig. At Charleroi there is great activity in all the works, and it is this favourable state of things which gives firmness to the markets of the Belgian districts. Refining pig is quoted at 3*l.* 4s. to 3*l.* 6s. per ton at Charleroi, and forge pig at 3*l.* 16s. to 4*l.* 6s. per ton, according to numbers. The position of the French market has not improved in the Haute-Marne district; in consequence of the multiplicity of offers, buyers have withdrawn to some extent from the scene, and producers find themselves under the necessity of reducing the price of fine pig from 5*l.* 8s. to 5*l.* 4s. per ton. Specimens of irons of mixed fabrication having succeeded, and the samples having been found of good quality, it is probable that this species of manufacture will be continued in the department. The colliery of Carnières-Sud (Belgium) has just been sunk, at a depth of about 1100 ft., a vein of coal hitherto unknown in the basin of the district. The vein has a thickness of 20 in., and the coal is stated to be of excellent quality.

As indicated last week, transactions in copper have exhibited more activity at Paris, Chilian, after having been dealt in at 88*l.*, having been raised to 90*l.* per ton; but in presence of the pretensions of holders, buyers were held back. Lake has been held at Paris at 99*l.* to 100*l.*, and stocks are said to show signs of exhaustion; rolled has closed firm at 104*l.* A parcel of Lake Superior, Minesota mark, has found a purchaser at Havre at 100*l.* per ton. Prices continue firm at Hamburg, but the demand is without importance; at Cologne, Berlin, and Frankfort, prices have been firm, and without change. A small rise in the price of tin has been noted at Rotterdam; at Amsterdam, on the other hand, Banca remained inanimate; and the business remains limited to the wants of the day, and prices continue unchanged. Straits lead has been dealt in at Paris at 20*l.* 16s. to 21*l.* 4s., but transactions have been confined to the supply of immediate wants. The Marseilles and Havre markets have been dull, and Cologne and Berlin have remained without variation. Numerous sales of zinc have been made at Paris at 19*l.* 4s. to 19*l.* 8s per ton. Affairs have presented a better aspect at Hamburg; after the heavy sales of the previous week, the demand seems to be satisfied for the time, but holders maintain firmly the rates paid of late.

It is stated that Austrian mineral industry has been advancing of late years in a very satisfactory manner. The favourable change is to some extent attributed to the operation of a law adopted in January, 1854 (which remained within reasonable limits the pretensions of landed proprietors), which increased rapid means of communication, &c. Coal and iron are worked principally in the regions of the Alps, as, indeed, is the case with mines of lead, mercury, and other miscellaneous products. In Bohemia four-fifths of the mineral surfaces conceded are workings, and they exceed in extent the collieries of all the divisions of the Austrian Empire. Bohemia has also some celebrity for its iron mines, and the precious metals are not at all being neglected. Coal and iron are worked on a more or less extended scale in Moravia, Silesia, and Western Gallicia. Gold and silver workings occur principally in Hungary and the Siebenbürgen; and in the Hungarian districts of Kaschau and Neusohl zinc, copper, and other miscellaneous minerals are found. The working of coal in the Siebenbürgen and Volvodia has not reached a very great development, the right of extraction having long belonged exclusively to the proprietors of the soil. By a return made in 1859, it appeared that the State worked 18 per cent. of the mining surfaces, exclusive private enterprise undertaking the other 82 per cent. In the State as well as in private workings, coal was extracted in more than half the extent of surface explored; and the attention of the State authorities was afterwards devoted principally to the precious metals, while iron, to a great extent, absorbed the notice of private concessionaires. Continual efforts are made to obtain new concessions, but before they are granted it is made an indispensable condition that exploratory surveys should have been made over an area of 36 acres. The chief attention of speculators is directed towards Bohemia and Hungary, which have been very eagerly explored of late years.

It is stated in a Frankfort journal that the cannons of the Austrian marine are now being cast with a metal which is styled Aich, the name of the inventor. The metal has several excellent qualities, being very tenacious, while it can be easily puddled, hammered, and worked. When cold it supports a considerable bending without breaking, and its resistance, as well absolute as relative, is very superior to that of iron of the best quality. The metal is analysed as follows:—Copper, 60; zinc, 38·2; iron, 1·8.

A general annual meeting of the Belgian company for the construction of railway plant has just been held at Brussels. The report of the manager, and that of the council of inspection, stated that the company, which now counts three years of existence, has already made considerable demands for plant in Egypt, Russia, Spain, and Portugal, and that its products have been favourably approved. The manager stated, besides, that the orders at present on hand would keep the two establishments, formed at Brussells and La Croyère, actively employed for more than two years. The company devotes itself to the supply of railway plant of every description—locomotives, passenger carriages, goods trucks, fixed material, iron bridges, &c. The dividend declared for the year 1861-2 is at the rate of 10 per cent., independently of a replacement effected on the capital expended on buildings and tools; and works in course of execution, and the goods in warehouse, have been carried to the profit and loss account. The shareholders present at the meeting agreed unanimously to an issue of new shares to raise 20,000*l.*, an increase of capital to that amount being considered desirable, in order to facilitate the execution of important new contracts which the company is on the point of undertaking.

The company for carrying on mines and metallurgical works at Niederpfannenbach, which is one of the numerous enterprises failing to realise the golden mine of their early years, has also held its annual meeting recently. The absence of dividends for three years, and the difficulty of ascertaining the real value of concessions situated in the heart of a foreign country, have brought about discredit on the undertaking; but some parties are not disposed to despair absolutely of the future before it. The report of the council of administration, and the accounts and balance-sheets submitted to the proprietors, have an air of sincerity about them, which appears to indicate that the enterprise is wisely and honestly managed, and has, of course, a most important consideration. The total capital embarked in the undertaking appears to be about 109,000*l.*, and the object of the company is—first, the working of the Concordia, Zeus, Fischbacherwerk, Wuestselfen, Rother-Adler, Jasmin, and Ringerwald mines, belonging to it, and producing minerals of argentiferous lead iron; and, secondly, the production of lead and silver. In the last 12 months' working the Concordia mine produced 198 tons of lead minerals, 165 tons of prepared iron minerals, 20 tons of pyrites of iron, and 9½ tons of pyrites of copper, yielding in all a gross profit of 362*l.* Zeus supplied 438 tons of lead minerals for casting, 71 tons of spathic iron, 8 tons of copper minerals, and not quite ¾ ton of zinc minerals, the profit left by the working being 311*77.* The other mines have not yet yielded useful results, but works of exploration and appropriation are actively pursued with regard to them. About 1200 tons of minerals were delivered in the course of the year's working to mechanical washing apparatus, and the profit realised on the operation was 85*l.* The workshops have treated 1381 tons of mineral coming from the mines of the company, or purchased from other workings; and the products obtained amounted to 574 tons of refined lead and silver, and 9 tons of fine silver, while 98 tons of lead remained under treatment. The total value of the products obtained was 20,895*l.*, and the outlay upon them was 19,637*l.*, the net profit being thus only 1258*l.* The average sale price experienced, as compared with preceding years, a further depreciation, lead being placed at 17*l.* 14s. per ton at the mines. Adding together the various sources of revenue enumerated, and taking account of indirect receipts, amounting to 169*l.*, the total rough profit of the 12 months under review was 4991*l.* Expenses of management, rent payable to the State, &c., absorbed 2743*l.*, leaving a surplus of 2248*l.*, which was applied to the replacement of capital previously expended. The general result of the year's work would thus seem to be a return of about 2 per cent. upon the adventure of the shareholders. It would sound badly to declare a dividend of 2 per cent., although in England "the smallest trifle is thankfully received;" so the administration of the Niederfischbach devote themselves, instead, to the replacement of capital. They have an odd way of doing some things abroad.

MINING IN SOUTH AUSTRALIA.

At the Bremer Mine, the property of the Worthing Mining Company, the engine-shaft is being sunk to 85 fms. At the 43 there is a good paying lode in the north end. The level driven 70 fms. south of the engine-shaft, 40 fms. through a productive lode of rich stone, the remainder being dredge work. In the back of the 23 two stopes are being worked, and turn out good ores. A cross-cut is being driven at the 33 to intersect lodes to the north of the main workings. Upwards of 100 hands are employed at these mines. The following operations are going on satisfactorily. The calcining furnace prepares the small ore for the reducing furnace, which reduces 35 or 36 tons per week. The Kanmantoo Mining and Smelting Company are in a very satisfactory position. The stopes on the Emily's lode at the 16 are yielding on an average about 6 tons to the fathom of ore of good percentage. At the 30 the lode continues to improve. The stopes in Emily's lode are yielding about 4 tons per fathom of good black ore. From 110 to 120 tons of ore are raised per month. The smelting works are reducing to regulus about 33 tons of ore per week. They will shortly make fine copper, by which a considerable saving in cartage and freight will be effected.

At the Wheal Ellen Mine, in the same district as the two former, the main engine-house is fast approaching completion. The engine and pump-work, all complete, are ready for fixing. It is in contemplation to expend from 3000*l.* to 4000*l.* during the next six months for the purpose of completing the above and other necessary works, by which large reserves of ore, which were formerly worked, will be made available. Two men have sunk downwards of 500*l.*; or two since, the specimens of the ore which had been received in town; they were a fine grey ores and red oxides. A new reverberatory furnace has been erected at the new smelting furnace, also a blast furnace, which is at present reducing about 400*l.* of silver-lead ore. There are also at grass about 400 tons of lower class silver-lead ore. The prospects of this mine have steadily improved for some time past.

At the Kapunda Mine a serious feeling of dissatisfaction arose amongst the miners, who alleged that their samples are not dealt with fairly, and have sent a memorial, signed by 65 out of 93 tributers, asking for various alterations in the mode of sampling and other matters connected therewith. Discontent among the miners has for some time prevailed from the fact that a large number of the tributers have for some time past not earned enough to keep them. It was stated that the samples were unnecessarily small, and Messrs. Alfred Jenkin and Son, who are established as assayers, mining and smelting engineers, had announced to the tributers that any samples of ore sent to them would be dealt with in a just and professional manner: "they may depend upon the assays being strictly correct, and that they will be returned without any loss of time."

South Australian Advertiser, May 26.

COPPER FROM THE NORTH.—About 3 tons of copper ore in blocks and bars, comprising red and grey oxides and blue and green carbonates, have just been brought to Port Adelaide. They are the produce of three mines, and were taken from the warehouse by Messrs. Frost and Burtt, two of the proprietors. The ore is now lying in the store of Mr. H. Noltenius, and is well worth seeing. The largest block came from the Ste Dominic Mine, and weighs 12 cwts. 2 qrs. The three mines we have mentioned, together with seven others, lying about 230 miles from Port Augusta, belong to the Northern Mineral Association, which comprises a proprietary of 14 persons. The mines referred are in sight at the famous lode lately discovered in what is known as the "Yudanamutana" Mine. Since January last the proprietor has taken out $25,000 worth, or £5000.—*Fowler's Western Railroad Gazette, Chicago.*

GRYLLS'S ANNUAL MINING SHEET,

FROM JUNE 30, 1861, TO JUNE 30, 1862,

Containing the Quantity of Copper Ore sold from each Mine, British and Foreign—Average price per 21 cwts., and the Amount of Money—The Average Standard, Produce, and Price for the Year, both in Cornwall and Wales—The Total Amount of Ore, Fine Copper, and Money—Each Company's Purchase—And the Particulars of Copper Ores sold at the Ticketings in Cornwall, from June 30, 1843, to June 30, 1862.

CORNWALL.

Mines.	Ore (21 cwts.)	Amount.	Price.
Agar, Wheal	663	£ 4,947 19 6	£7 9 6
Alfred Consols	1622	8,129 19 0	5 0 0
Anna, Wheal	447	1,425 10 6	3 4 0
Arthur, Wheal	590	1,755 1 0	2 19 6
Basset, Wheal	3002	20,706 0 0	6 18 0
Bedford United	2522	12,036 9 6	4 15 6
Botallack	474	3,808 7 6	8 0 6
Brookwood	510	2,821 6 6	5 10 6
Buller, Wheal	1184	6,901 17 6	5 16 6
Burra Burra	108	363 18 6	3 7 6
Calstock Consols	753	2,455 13 0	3 5 0
Camborne Vean	667	2,925 18 0	4 7 6
Carn Brea	2790	9,511 6 6	3 8 0
Carn Camborne	136	609 1 0	4 9 6
Charlotte United	844	5,974 3 6	7 1 6
Clifford, Wheal	2382	13,877 13 0	5 16 6
Clifford Amalgamated	10431	53,233 18 0	5 2 0
Collacombe	392	1,990 1 0	5 1 0
Condurrow	1909	6,630 8 0	3 9 6
Copper Hill	1621	8,678 14 0	5 7 0
Craddock Moor	1889	13,025 2 0	6 18 0
Crebor, Wheal	129	504 5 6	3 18 0
Crelake, Wheal	2133	10,378 13 6	4 17 6
Cuddra	234	588 12 0	2 10 6
Devon and Cornwall	558	1,572 1 6	2 16 6
Devon Great Consols	22419	108,243 11 6	4 16 6
Dolcoath	463	1,834 10 0	3 19 0
Duchy and Peru	215	562 13 0	4 12 6
East Alfred Consols	559	2,421 6 6	4 6 6
East Basset	1662	11,978 5 6	7 4 0
East Caradon	4290	28,990 17 6	6 15 0
East Carn Brea	1680	10,189 8 6	6 1 6
East Crinnis and South Par.	1204	6,233 1 0	5 3 6
East Pool	2670	10,330 9 6	3 17 6
East Rosewarne	460	3,480 5 0	7 11 6
East Russell	1306	6,888 13 6	5 5 6
Edward, Wheal	1610	5,723 14 0	3 11 0
Emma, Wheal	1786	7,403 5 0	4 3 0
Fowey Consols	4456	26,332 4 0	5 18 0
Friendship, Wheal	1695	12,437 3 6	7 9 0
Furaden	244	1,515 16 6	6 4 6
Gawton Copper	172	623 2 6	3 12 6
Gonamena	485	2,126 1 6	4 7 6
Grambler and St. Aubyn	200	1,316 17 0	6 11 6
Great Wheal Alfred	3021	12,037 13 6	3 19 6
Great Brigan	140	802 4 0	5 14 6
Great Wheal Busy	7025	20,474 19 6	2 18 6
Great Crinnis	126	516 5 0	4 1 6
Great Wheal Martha	2916	6,669 11 0	2 6 0
Great South Tolgus	1190	9,654 2 0	8 2 6
Grenville, Wheal	175	1,110 0 6	6 7 0
Gunnis Lake, Clitter's	636	3,587 18 0	5 13 0
Harriett, Wheal	233	1,455 2 6	6 5 0
Hawkmoor	419	1,942 8 0	4 13 0
Hingston Down	2023	8,554 14 0	4 4 6
Holmbush	1712	10,498 8 0	6 2 6
Kelly Bray	812	2,511 5 0	3 2 0
Lady Bertha	1395	4,246 13 6	3 1 0
Levant	1112	6,137 15 0	5 10 0
Margery, Wheal	1257	6,291 10 0	5 0 0
Marke Valley	4529	20,428 6 6	4 10 0
Molland	167	876 3 6	5 5 0
Moyle, Wheal	233	361 10 0	1 11 0
New Treleigh	330	1,541 15 0	4 13 6
North Basset	550	2,655 0 6	4 16 0
North Crofty	527	2,036 13 6	3 17 6
North Downs	1593	12,306 6 6	7 14 6
North Grambler	475	3,288 5 6	6 18 6
North Wheal Robert	1223	8,757 11 6	7 3 0
North Roskear	1321	9,121 7 0	6 18 0
North Treskerby	1901	10,517 3 0	5 10 6
Okel Tor	1236	3,459 1 0	2 16 0
Par Consols	3171	25,386 0 0	8 0 0
Pedn-an-dres	135	742 10 0	5 10 0
Pendeen Consols	1193	4,326 19 0	3 12 6
Perran Mines	299	1,078 17 0	3 12 0
Phœnix Mines	5043	30,416 19 0	6 1 0
Polmear, Wheal	1280	6,533 0 6	5 2 0
Prideaux Wood	110	375 10 0	3 8 0
Prosper United	348	1,817 2 0	5 4 6
Rosewarne	735	6,229 4 0	8 9 6
Rosewarne Consols	232	2,557 4 0	11 0 6
Seton, Wheal	2767	13,819 10 6	5 0 0
Sortridge Consols	686	5,028 19 6	7 6 6
South Basset	250	661 17 6	2 13 0
South Bedford	862	2,001 9 6	2 6 6
South Caradon	5289	49,263 15 0	9 6 6
South Crenver	328	1,194 7 0	3 13 0
South Crinnis	1131	5,166 18 0	4 11 6
South Crofty	311	1,113 2 0	3 11 6
South Frances	2608	16,067 19 0	6 3 0
South Tolgus	2379	16,439 12 0	6 18 0
St. Day United Mines	945	3,419 2 6	3 12 6
Stray Park	574	3,018 12 6	5 5 0
Sundry small mines	2754	14,338 2 0	5 4 0
Tincroft	2386	7,508 8 0	3 3 0
Tolcarne	484	2,378 2 6	4 18 0
Tolvadden	1024	5,015 1 0	4 18 0
Trehill	150	327 6 0	2 3 6
Treloweth	592	4,552 19 6	7 14 0
Treavean	434	1,053 8 0	2 8 6
Trevoole	250	766 12 6	3 1 0
Treworlis	230	1,209 14 0	5 5 0
Tywarnhaile	3105	10,102 5 6	3 5 0
United Mines	1192	3,395 7 0	2 17 0
Unity Consols, Wheal	214	1,171 0 0	5 9 6
Uny, Wheal	163	837 19 6	5 2 6
West Alfred Consols	502	1,104 15 0	2 4 0
West Basset	5738	32,610 0 6	5 14 0
West Caradon	2878	22,565 13 0	7 17 0
West Damsel	1887	7,448 2 6	4 1 0
West Fowey Consols	214	1,652 17 0	7 14 6
West Seton	6388	38,743 13 6	6 2 6
West Stray Park	452	3,207 19 0	7 2 0
West Tolgus	270	1,293 4 0	4 16 0
West Trevelyan	247	1,947 0 6	7 17 6
Yarner	549	1,736 3 6	3 3 0

WALES.

Australian	217	£ 6,901 18 6	£31 16 0
Ballycummisk	392	3,025 11 0	7 14 6
Bathurst	105	1,799 4 6	17 2 6
Berehaven	7720	71,819 18 6	9 6 0
Californian	999	18,495 0 0	18 10 6
Cobre	12514	159,038 0 6	12 14 0
Chili	628	12,301 5 6	19 12 0
Cuba	6388	82,145 11 6	12 17 6
Del Soto	195	3,592 14 6	18 8 6
French Ore	540	2,688 14 0	4 19 6
Fortune (West Australia)	420	8,042 19 6	19 3 0
Genoa	209	1,992 12 6	9 10 6
Glasgow Siag	148	185 0 0	1 5 0
Great Northern (South Aus.)	362	6,369 0 6	17 12 0
Knockmahon	6245	58,544 15 6	9 7 6
Laxey	695	3,830 5 6	5 10 0
Llandudno	104	100 17 6	0 19 6
Lochwinnoch	490	1,955 2 0	4 0 0
Maria, Wheal	771	17,160 1 6	22 5 0
Ookip	1245	37,519 8 0	38 2 6
Seville	321	2,762 2 0	5 10 0
Sestri	122	1,631 11 6	13 7 6
Spectakel	281	7,417 13 6	26 8 0
Springbok	373	10,085 5 0	27 1 0
Sundry small mines	1483	20,887 1 0	14 2 0
Union	185	4,132 1 6	22 6 0
West Australian	200	2,817 6 6	19 1 6
Worthing Regulus	108	5,064 8 0	46 18 0

Copper ores sold in Cornwall, from June 30, 1861, to June 30, 1862.

Copper ores	186,622 tons	Average produce	6¼
Fine copper	11,675 „	Average standard	£127 13 0
Amount of money	£977,017 2s. 6d.	Average price	5 4 6

Compared with the previous year,

Copper ores—increase	10,525 tons	Fine copper—increase	157 t. 8 c.
Amount of money—decrease	£36,383 3s.		

Copper ores sold in Wales, from June 30, 1861, to June 30, 1862.

Copper ores	43,460 tons	Average produce	14⅜
Fine copper	6,263 t. 6 c.	Average standard	£103 19 0
Amount of money	£553,305 10s	Average price	12 14 6

Compared with the previous year,

Copper ores—increase	4,975 tons	Fine copper—increase	752 t. 8 c.
Amount of money—increase	£51,964 4s.		

Totals in Cornwall and Wales.

Copper ores	230,082 tons	Fine copper	17,938 t. 6c.
Amount of money	£1,550,322 12s. 6d.		

Compared with the previous year,

Copper ores—increase	15,500 tons	Fine copper—increase	909 t. 16 c.
Amount of money—increase	£15,581 1s.		

Copper ores purchased by Copper Cos.—June 30, 1861, to June 30, 1862.

Purchasers.	Ore (21 cwts.)	Copper.	Amount.
Mines Royal Copper Company	770	71 t. 8c.	£ 6,203 16 3
Vivian and Sons	35,604	2836 18	241,023 0 2
Freeman and Copper Company	16,016	1303 5	112,814 11 6
Pascoe Grenfell and Sons	25,269	2416 17	209,600 7 8
Sims, Willyams, Nevill, and Co.	24,880	2182 4	184,412 5 4
Williams, Foster, and Co., and Crown Co.	40,820	3587 6	312,927 13 3
Mason and Elkington	20,606	1688 16	142,056 15 5
F. Bankart and Sons	9,572	678 1	57,462 14 1
Copper Miners' Company	21,211	1539 3	137,345 8 3
C. Lambert	16,235	714 10	55,773 6 7
Newton, Keates, and Co.	1,811	123 17	10,703 12 6
Alkali Company	116	3 7	232 13 8
Sweetland, Tuttle, and Co.	11,406	636 7	51,344 0 1
British and Foreign Copper Co.	388	47 15	4,069 3 3
Jennings and Co.	518	48 16	4,353 4 6

Sold at the Ticketings in Cornwall, from June 30, 1843, to June 30, 1862.

Date.	Ore (21 cwts.)	Money.	Produce.	Standard.
1843	144,806	£ 804,445 19 0	7½	£110 1 0
1844	152,667	815,246 9 6	7⅝	109 17 0
1845	157,000	835,350 19 6	7¾	103 10 0
1846	158,913	886,785 1 6	7¾	106 8 0
1847	148,674	830,739 9 0	8	103 12 0
1848	155,616	825,080 2 6	8¼	97 7 0
1849	144,983	716,917 7 0	8¼	92 11 0
1850	150,890	814,037 3 0	7¾	103 19 0
1851	154,299	808,244 1 6	7⅞	101 0 0
1852	152,802	828,057 19 6	7⅞	106 12 0
1853	180,095	1,124,561 2 0	6⅞	136 16 0
1854	180,687	1,153,756 3 6	6¼	140 2 0
1855	188,969	1,212,686 8 0	6¼	141 10 0
1856	205,305	1,283,639 8 6	6⅛	140 0 0
1857	198,697	1,276,844 12 0	6¼	139 6 0
1858	183,292	1,083,728 18 6	6⅛	135 1 0
1859	183,944	1,079,075 17 0	6⅛	133 6 0
1860	180,448	1,079,403 4 6	6¼	133 18 0
1861	176,097	1,013,400 5 6	6¼	130 1 0
1862	186,662	977,017 2 6	6¼	127 13 0

MINING IN IRELAND.

[FROM OUR CORRESPONDENT IN THE COUNTY OF CORK.]

THE SCHULL DISTRICT.—About three miles north of Schull Bay Mine, and about half a mile east of the "Gap of Mount Gabriel," which is formed by the great cross-course alluded to in a former communication, the LETTER MINE is situate, on the northern slope of Mount Gabriel. This mine has been at work, or rather a little doing in it, during the last eight or ten years, and has been inspected and reported upon by several respectable and first-class mining agents; but, notwithstanding all the reports and inspections, there appears to have been no uniform plan of operations laid down for the proper development of the mine. The surface rocks are much broken and twisted in various directions, and the carbonate of copper is found in large beds in the interstratified slate and elvan rocks, and also rich specimens of grey copper ore. The direction of these lodes or beds is about 30° south of west and north of east, and their dip west is at an angle of 45°. The operations hitherto have been carried out by costeaning, sinking shafts, and driving levels. The plan, however, of sinking shafts appears not to have been attended with profitable results, and it has often been remarked that the lode in the different shafts has been cut out; the lode has been unbottomed, and so forth; but when a shaft is sunk straight down through a bed or lode dipping at an angle of 45°, it is not at all wonderful that it should have passed through it; the wonder would be if it did not pass through it. These anticlinal beds, or what are commonly designated "saddle-back lodes," are in some places 30 feet thick, most of which would yield about 3 per cent. of copper, and to a careful observer they are as clearly marked and defined as a line drawn on a sheet of paper, but whether they are understood is no affair of mine. It is certain, however, that the shafts and new winze have passed through the lode into the slate rock, but it is equally certain the lodes have neither been cut out nor unbottomed. This mine clearly illustrates the fact that a universal system of mining operations, or rather the application of a universal system of operations, in all cases leads only to disappointment and certain loss. South of the copper lodes a vein of barytes has been found running east and west, several cargoes of which have been raised and shipped; it is stained with iron, and intermixed with other substances, and is not unlikely to lead to a deposit of lead ore. A deep level may be brought in, which would drain all the copper lodes and the barytes to a considerable depth, and the mine might be worked for years without machinery, except a crusher for reducing the ore. It is the opinion of those who are well acquainted with the district that a plan of working may be laid down so as to work this mine to a profit, or it may be so worked as to lead to a loss.

About two miles to the east of Letter, and also at the north side of the Mount Gabriel range, is the BALLYDEHOB MINE, which was first opened about 40 years ago by Col. Hall, who paid one-eighth royalty, and worked the mine to a profit. Some attempts have since been made to work this mine, but at present it is idle. The lodes in the western part of the sett are intersected by a large cross-course, and the mine is commanded by a stream of water sufficient for crushing and dressing the ore. It is well situated, and about a mile from a convenient spot for shipping the produce and landing materials, &c. It would, however, be useless to attempt to work this mine without a small steam-engine for pumping and drawing the stuff.

Three miles north of Ballydehob (all in the parish of Schull) there is another mountain range, running nearly east and west, which extends for many miles east from Dreenalamon to Derrycarhoon, Shronagree, &c. Several copper lodes have been opened in the sides of these mountains, and many of the old works are attributed to the Danes. Curious implements, the use of which is at present unknown, have been found in these old works, which are always spoken of by the country people as the Danes' works. Some of these copper lodes going west intersect the great cross-course at Dreenalamon. Capt. M. Francis, in an able letter on the Schull district, which appeared a short time ago in the Journal, was no doubt correct in the opinion he expressed "that a body of metal would be found under the great barytes deposit at Dreenalamon." In fact, many tons of rich grey copper ore and carbonates of copper have been quarried out of the sides of the mountains of Dreenalamon, Derrycarhoon, and Shronagree, and great natural facilities exist for the development of this extensive and comparatively unknown mining district. Mr. G. H. Kinahan, in his geological remarks on this district, appears to have made a remarkable discovery at Dreenalamon, for he states, respecting the Dreenalamon lodes,—"Towards the north of the district, in the townland of Dreenalamon, on the south slope of Mount Corin, 4¼ miles north, 10° east, of Schull there is a thick lode of sulphate of baryta, which bears nearly east and west; this a few years ago was extensively worked. In the vicinity of the baryta lode, Mr. Willson records a bed containing copper ore, on which trials were made." Unfortunately, however, for Mr. Kinahan, the baryta lode he has described runs north and south, and is the continuation of the great cross-course, which has been traced from Bantry Bay to Cape Clear, and described in a former paper. Mr. Jukes, in his notes on the mines of the south-west of Cork, has the following remarks:—"This copper deposit (stretching from Waterford through Cork and Kerry) was, like most materials deposited from water, not in a continuous sheet, but occurred in patches in different beds of grit or slate, through a thickness of 300 or 400 ft., over all that area. None of the beds of grit and slate are themselves continuous throughout the formation, which is made up of local cakes of sand and mud, deposited side by side over the area. The copper ore was distributed here and there among these beds as a copper sand, or copper mud, mixed with the siliceous and argillaceous sands and clays." In another paragraph he says—"Some action subsequently determined the segregation of some of the copper ore out of the beds into some of these hollow fissures by some process, of the exact nature of which we are ignorant, and thus new mineral veins, or true lodes, were formed here and there about the country."

Now, assuming Mr. Jukes's very curious theory as to the formation of mineral veins or lodes to be correct, we may also be allowed to assume the theory that some thousands of years hence some action may determine the segregation of some of the copper ore out of the beds of Mount Gabriel into the hollow fissures in Schull Harbour; and by some process, of the exact nature of which we are ignorant, probably by the admixture of the sand and mud in the bottom of the harbour, we may thus have a new crop of mineral veins, or lodes a mile wide and three miles long.

ON THE SLATE QUARRIES NEAR BANGOR.

It has truly been said, as we all must deplore,
That Grenville and Pitt made peers by the score;
But now 'tis asserted, unless I have blundered,
There's a man who makes peeresses here by the hundred:
He regards neither Grenville, nor Portland, nor Pitt,
But creates them at once without patent or writ;
By the stroke of the hammer, without the king's aid,
A lady, or countess, or duchess is made.*
Yet high is their station, from which they are sent,
And all their great titles are got by descent,
And when they are seen in a palace or shop,
Their rank they preserve, and are still at the top.
Yet no merit they claim from their birth or connexion,
But derive their chief worth from their native complexion;
And all the best judges prefer, it is said,
A countess in blue to a duchess in red.
This countess or lady, though crowds may be present,
Submits to be dressed by the hands of a peasant;
And you'll see when her grace is but once in his clutches,
With how little respect he will handle a duchess.
Close united they seem, but all who have tried them,
Soon discover how easy it is to divide them.
No spirit have they, they are as thin as a lath,
The countess wants life, and the duchess is flat;
No passion or warmth to the countess is known,
And her grace is as cold, and as hard as a stone;
Yet I fear you will find, if you watch them a little,
That the countess is frail, and the duchess is brittle;
Too high for a trade, without any joke,
Though they never are bankrupts, they often are broke;
And tho' not a soul ever pilfers or cozens,
They are daily shipp'd off, and transported by dozens.
In France, jacobinical France, we have seen
How nobles have bled by the fierce guillotine;
But what's the French engine of death to compare
To the engine which Greenfield and Bramah† prepare;
That democrat engine, by which we all know,
Ten thousand great duchesses fell at a blow.
And long may that engine its wonders display,
Long level with ease all the rocks in its way;
Till the Vale of Nant-Erancon of slates is bereft,
Nor a lady, nor countess, nor duchess is left.

JUDGE LEYCESTER.

* The names given by General Warbuton, about 1765, to the different sized slates produced at these quarries.

† Greenfield and Bramah, persons originally engaged in conducting the works, and who directed an instrument for removing a great body of the slate at once.

NEW COMBINED TURBINE, WINDING, AND PUMPING MACHINERY,

MANUFACTURED by GEORGE LOW,
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Who respectfully begs to bring the above to the notice of the mining public, as an exceedingly cheap and easy method of applying water-power for the above purposes.

The TURBINE, WINDING, and PUMPING MACHINERY are all fixed complete to one strong cast-iron bed plate, which can be placed in any situation without pit or excavation, and any height not exceeding 33 ft. from bottom of fall, the supply and suction pipe being all that is required to be connected to it, and can be brought in any direction. This combined machine can be easily removed when necessary.

G. Low begs also to state that the TURBINE is the most efficient and the cheapest method of applying water-power for mining purposes.

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Prize Medals—International Exhibition, Class 1 and 2.

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Fully described in the MINING JOURNAL of July 5.

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APPARATUS FOR RAISING WATER ECONOMICALLY, ESPECIALLY APPLICABLE TO ALL KINDS OF MINES, DRAINAGE, WELLS, MARINE, FIRE, &c.

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3.—It occupies a very small space.
4.—It raises water from any depth with the same facility and economy.
5.—It raises with the water, and without the slightest injury to the apparatus, sand, mud, wood, stone, and every object of a smaller diameter than its tube.
6.—It is easily removed, and requires no cleaning or attention.

A mining pump can be seen daily at work, at Wheal Concord Mine, South Sydenham, Devon, near Tavistock; and a shipping pump at Woodside Graving Dock Company (Limited), Birkenhead, near Liverpool.

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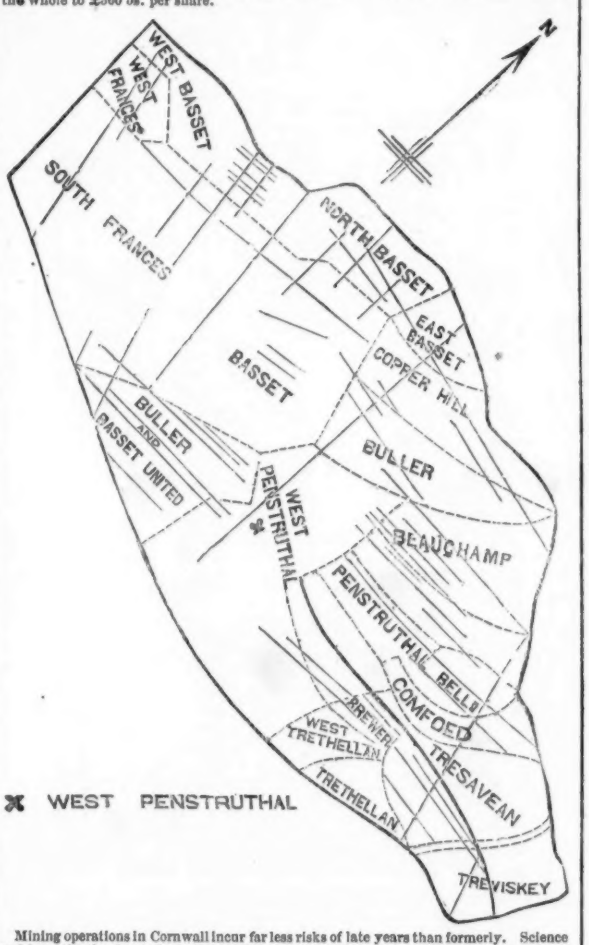
WEST PENSTRUTHAL MINING COMPANY.

Conducted upon the "COST-BOOK SYSTEM,"
Consisting of 1024 shares.
SECRETARY—Mr. John Hoyle.
LONDON OFFICES,—14, CORNHILL, E.C.

Messrs. Tredinnick and Co., of 78, Lombard-street, have received instructions to dispose of 200 shares at £7 10s. each, 10s. payable upon application, and £7 upon transfer of shares.

The company's grant is held under leases from D. Boger, Esq., S. Usticke, Esq., and the Rev. H. M. St. Aubyn, at 1-18th royalty.

The subjoined plan will show the position of West Penstruthal Mine in reference to others of vast and acknowledged wealth—namely, Penstruthal returned upwards of £200,000 worth of copper ores; Comfort, Bell, and Beauchamp largely. Buller, upon an outlay of £1280, has given £237,884 profits, and at one time sold for £300,000. Tresavean, upon an outlay of £32 10s. per share, returned profits of £449,040, and sold at one time for £2700 per share. Brewer, West Trethellan, and Trethallan, upon trifling outlays, realised £200,000 worth of copper ores, and £80,000 profits. Treviskey was also exceedingly rich, and gave large profits. Copper Hill is selling for £85 per share, 100 per cent. premium, and is declaring handsome dividends. East Basset at one time sold for £100,000, and North Basset £250,000, and the expenditure upon both mines amount only to £27,104. The Basset Mine, £2624 paid up, has declared dividends of £299,520, and at one time sold at £400 per share. West Basset sold at £200,000, but at present is reduced in value to £75,000. The shares, 6000 in number, £1 10s. paid up, command a market price of 12½, whilst the aggregate dividends have been £22 12s. per share, or £135,600 up to the present date. South Frances also has been one of our best mines, and is again improving in yields and prospects. The shares, 496 in number, £18 18s. 9d. paid up, sell at £110 per share—pay regularly two-monthly dividends, amounting in the whole to £360 5s. per share.



Mining operations in Cornwall incur far less risks of late years than formerly. Science and investigation have thrown great light upon the phenomena of lodes, strata, and the influence of north and south cross-courses, elvans, and crystallisation in the formation and collection of profitable deposits of ores, hence ample proof can be adduced that mining enterprise can be conducted with as much certainty of success as any other speculative medium for the legitimate absorption of capital, as for instance Joint-Stock Banks, Railways, Insurance, Canals, Docks, or other Joint-Stock undertakings.

The West Penstruthal Mine possesses all the elements essential to success, and the works will be carried out with practical spirit and economy. The 200 shares now offered to the public at £7 10s. each, must be regarded as a favourable opportunity for investment.

FORM OF APPLICATION.

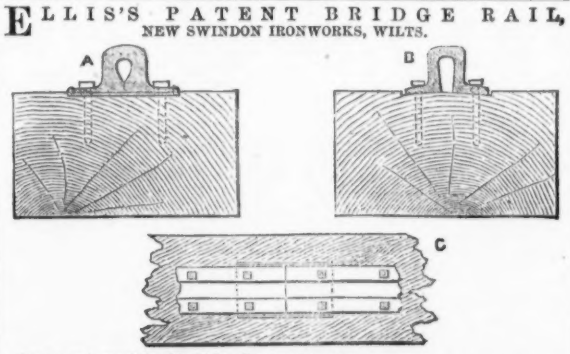
Messrs. Tredinnick and Co., 78, Lombard-street, London.

GENTLEMEN,—I hereby apply for shares in the West Penstruthal Mine, and enclose you herewith the sum of £ , being 10s. per share on the full number applied for; and I undertake to pay a further sum of 7*l.* per share on all or any part thereof that may be assigned to me.

Usual Signature .....
Name in full, and plainly written .....
Profession or occupation .....
Address in full .....
Date .....

ELLIS'S PATENT BRIDGE RAIL,

NEW SWINDON IRONWORKS, WILTS.



The advantages claimed by this rail over others are:—

1.—Its having a flat or solid surface its whole breadth to bolt down to the timbers (see section A).

2.—The impossibility of its collapsing, as is the case with all other bridge rails (see section B).

3.—Its being perfectly rigid. The bolts, therefore, remain firm in the timber till the rail is quite worn out.

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This rail has been submitted to several of the principal engineers and practical men of the day, who have pronounced it the best that has been produced. It carries the palm for lightness, durability, and consequently cheapness.

The patent rail at 62 lbs. per yard is sufficiently strong to carry the heaviest engine on the Great Western Railway.

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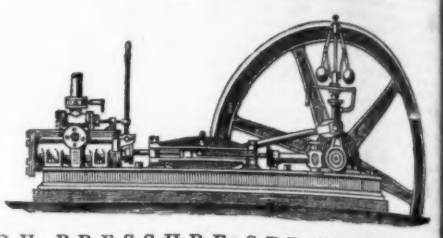

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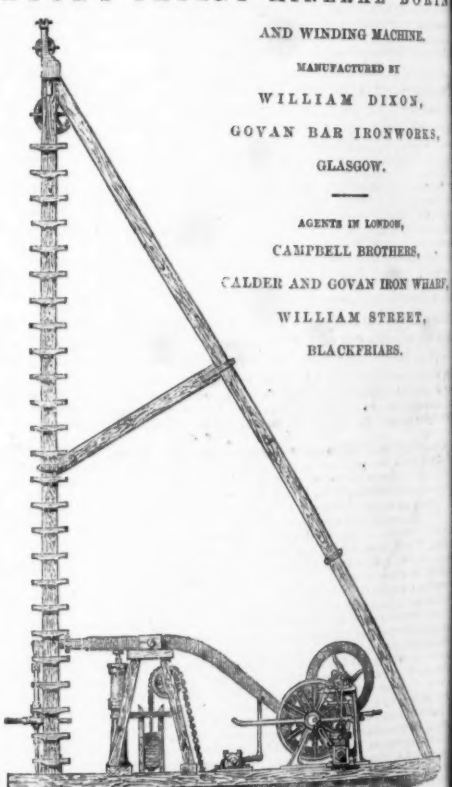

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